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TO	:	Commissioner for Patents Mail Stop: Appeal Brief - Patent
FROM	:	Oleg F. Kaplun, Esq. of Fay Kaplun & Marcin, LLP
DATE	:	November 30, 2006
SUBJECT	:	US Patent Appln. Serial No. 09/821,122 for *Method for Adaptive Data/Content Insertion in MPEG2 Transport Stream* Our Ref.: US010134

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Attorney Docket No. US 010134

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s)	:	Devara
Serial No.	:	09/821,122
Filing Date	:	March 29, 2001
For	:	Method for Adaptive Data/Content Insertion in MPEG2 Transport Stream
Group Art Unit:	:	2623
Examiner	:	Dominic D. Saltarelli

Mail Stop: Appeal Brief - Patent
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By: Oleg F. Kaplun (Reg. No. 45,559) Date: November 30, 2006

TRANSMITTAL

In response to the Notification of Non-Compliant Appeal Brief mailed October 31, 2006, transmitted herewith please find a copy of a revised Appeal Brief for filing in the above-identified application. No fees are believed to be required. The Commissioner is hereby authorized to charge the **Deposit Account of Fay Kaplun & Marcin, LLP NO. 50-1492** for additional required fees. A copy of the paper is enclosed for that purpose.

Respectfully submitted,

Dated: November 30, 2006

By: _____
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Serial No.: 09/821,122
Group Art Unit: 2623
Attorney Docket No.: US010134

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	)	
	)	
Kavitha Vallari Devara	)	
	)	
Serial No.: 09/821,122	)	Group Art Unit: 2623
	)	
Filed: March 29, 2001	)	Examiner: Dominic D Saltarelli
	)	
For: Method for Adaptive Data/Content Insertion in MPEG2 Transport Stream	)	**Board Of Patent Appeals And Interferences**
	)	

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

In support of the Notice of Appeal filed July 5, 2006, and pursuant to 37 C.F.R. § 41.37, Appellant presents an appeal brief in the above-captioned application.

This is an appeal to the Board of Patent Appeals and Interferences from the Examiner's final rejection of claims 1-25 in the final Office Action dated April 5, 2006. The appealed claims are set forth in the attached Claims Appendix.

1. Real Party in Interest

This application is assigned to Koninklijke Philips Electronics N.V., the real party in interest. This assignment is recorded in the parent case for this application, U.S. Patent 6,445,740.

2. Related Appeals and Interferences

There are no other appeals or interferences which would directly affect, be directly affected, or have a bearing on the instant appeal.

3. Status of the Claims

Claims 1-25 have been rejected in the final Office Action. The final rejection of claims 1-25 is being appealed.

4. Status of Amendments

All amendments submitted by the appellant have been entered.

5. Summary of Claimed Subject Matter

The present invention, as recited in claim 1, relates to an adaptive data insertion mechanism inserting data within a transport stream without destructive disturbance. The mechanism comprises a bandwidth estimator (202) producing an estimate (BW estimate) of future available bandwidth within a transport stream (200) from future programming information (204) to be transmitted by said transport stream. (See Specification, p. 11, ll. 14-20; Fig. 2). The mechanism comprises a scheduler (203) prioritizing and scheduling insertion of insertion content

to be inserted within said transport stream (200) based upon said estimate (BW estimate) of future available bandwidth and required insertion bandwidth (204) of said insertion content. (See Id., p. 11, l. 21 – p. 12, l. 18; Fig. 2). The mechanism comprises an insertion unit (205) inserting scheduled insertion content (207) within said transport stream (200) by replacement of selected replaceable content within said transport stream (200) to form a new transport stream (201) if sufficient bandwidth is available. (See Id., p. 12, l. 19 – p. 13, l. 8; Fig. 2). The sufficient bandwidth is determined (by estimator 202) from said estimate of future available bandwidth and said required insertion bandwidth. (See Id., p. 11, ll. 14-20; Fig. 2).

The present invention, as recited in claim 5, relates to a transceiver. The transceiver (111) comprises an input connection receiving an incoming transport stream (200). (See Id., p. 10, ll. 19-23; Fig. 2). The transceiver (111) comprises an output connection from which a new transport stream (201) is transmitted. (See Id.). The new transport stream (201) includes at least portions of said incoming transport stream (200). (See Id., p. 12, l. 19 – p. 13, l. 8). The transceiver (111) comprises an adaptive data insertion mechanism (estimator 202, scheduler 203, inserter 201) for inserting data within said incoming transport stream without destructive disturbance. (See Id., p. 10, ll. 19-23; Fig. 2). The mechanism further comprises a bandwidth estimator (202) producing an estimate (BW estimate) of future available bandwidth within a transport stream (200) from future programming information (204) to be transmitted by said transport stream. (See Specification, p. 11, ll. 14-20; Fig. 2). The mechanism comprises a scheduler (203) prioritizing and scheduling insertion of insertion content to be inserted within said transport stream (200) based upon said estimate (BW estimate) of future available bandwidth and required insertion bandwidth (204) of said insertion content. (See Id., p. 11, l. 21 – p. 12, l. 18; Fig. 2). The mechanism comprises an insertion unit (205) inserting scheduled

insertion content (207) within said transport stream (200) by replacement of selected replaceable content within said transport stream (200) to form a new transport stream (201) if sufficient bandwidth is available. (See Id., p. 12, l. 19 – p. 13, l. 8; Fig. 2). The sufficient bandwidth is determined (by estimator 202) from said estimate of future available bandwidth and said required insertion bandwidth. (See Id., p. 11, ll. 14-20; Fig. 2).

The present invention, as recited in claim 9, relates to a method, for use in a transceiver, of adaptive data insertion within a transport stream without destructive disturbance. The method comprises producing (302) an estimate of future available bandwidth within the transport stream from future programming to be transmitted by the transport stream. (See Id., p. 14, ll. 14-16; Fig. 3). The method comprises prioritizing and scheduling (303) insertion of insertion content to be inserted within the transport stream based upon the estimate of future available bandwidth and required insertion bandwidth of said insertion content. (See Id., p. 14, ll. 17-19; Fig. 3). The method comprises inserting (305) scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream if sufficient bandwidth is available. (See Id., p. 15, ll. 4-8; Fig. 3). The sufficient bandwidth is determined (by estimator 202) from said estimate of future available bandwidth and said required insertion bandwidth. (See Id., p. 11, ll. 14-20; Fig. 2).

The present invention, as recited in claim 13, relates to a computer program product within a computer usable medium for adaptive data insertion within a transport stream without destructive disturbance. (See Specification, p. 24, ll. 3-19). The product comprises instructions for producing (302) an estimate of future available bandwidth within the transport. (See Id., p. 14, ll. 14-16; Fig. 3). The product comprises instructions for prioritizing and scheduling (303) insertion of insertion content to be inserted within the transport stream based

upon the estimate of future available bandwidth and required insertion bandwidth of said insertion content. (See Id., p. 14, ll. 17-19; Fig. 3). The product comprises instructions for inserting (305) scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream if sufficient bandwidth is available. (See Id., p. 15, ll. 4-8; Fig. 3). The sufficient bandwidth is determined (by estimator 202) from said estimate of future available bandwidth and said required insertion bandwidth. (See Id., p. 11, ll. 14-20; Fig. 2).

The present invention, as recited in claim 17, relates to a data transport stream embedded in a carrier. The stream comprises a first portion derived from a transport stream (200). (See Id., p. 10, ll. 19-23; Fig. 2). The stream comprises a second portion derived from insertion content (207). (See Id., p. 10, ll. 19-23; p. 13, ll. 16-19; Fig. 2). A ratio of the first portion to the second portion is determined by an estimate of available bandwidth (BW estimate) within said transport stream (200) representing selected replaceable content within said transport stream (200) and by insertion of said insertion content (207) by replacement of said selected replaceable content within said transport stream (200) with portion of said insertion content (207) to form said data transport stream (201) if sufficient bandwidth is available. (See Id., p. 11, ll. 14-20; p. 11, l. 21 – p. 12, l. 18; Fig. 2). The sufficient bandwidth is determined (by estimator 202) from said estimate of available bandwidth and required insertion bandwidth of said insertion content. (See Id., p. 11, ll. 14-20; Fig. 2). The estimate of available bandwidth within said transport stream (200) is derived from information regarding future programming (207) to be transmitted on said transport stream (200). (See Id.).

6. Grounds of Rejection to be Reviewed on Appeal

I. The Rejection of Claims 1, 3-5, 7, 9, 11-13, 17, and 19-20 Under 35 U.S.C. § 103(a) over EP 0 926 894 A1 to Tranchard et. al. ("Tranchard") in view of U.S. Pub. No. 2001/0024239 to Feder et. al. ("Feder").

II. The Rejection of Claims 2, 6, 8, 10, 14-16, and 18 Under 35 U.S.C. § 103(a) over EP 0 926 894 A1 to Tranchard et. al. ("Tranchard") in view of U.S. Pub. No. 2001/0024239 to Feder et. al. ("Feder") and further in view of U.S. Patent No. 6,192,049 to Sohraby et. al. ("Sohraby").

III. The Rejection of Claims 21 Under 35 U.S.C. § 103(a) over EP 0 926 894 A1 to Tranchard et. al. ("Tranchard") in view of U.S. Pub. No. 2001/0024239 to Feder et. al. ("Feder") and further in view of U.S. Patent No. 7,016,337 to Wu et. al. ("Wu").

IV. The Rejection of Claims 22 and 23 Under 35 U.S.C. § 103(a) over EP 0 926 894 A1 to Tranchard et. al. ("Tranchard") in view of U.S. Pub. No. 2001/0024239 to Feder et. al. ("Feder") and further in view of U.S. Patent No. 5,592,470 to Rudrapatna et al. ("Rudrapatna")

V. The Rejection of Claims 24 and 25 Under 35 U.S.C. § 103(a) over EP 0 926 894 A1 to Tranchard et. al. ("Tranchard") in view of U.S. Pub. No. 2001/0024239 to Feder et. al. ("Feder") and further in view of U.S. Patent No. 6,567,981 to Jeffrey ("Jeffrey").

VI. The Rejection of Claims 17–20 Under 35 U.S.C. § 101(a) for claiming unpatentable subject matter.

VII. The Rejection of Claims 22 Under 35 U.S.C. § 112 for containing subject matter not described in the specification.

7. Argument

I. The Rejection of Claims 1, 3-5, 7, 9, 11-13, 17, and 19-20 Under 35 U.S.C. § 103(a) Being Obvious Over Tranchard in view of Feder Should Be Reversed.

A. The Examiner's Rejection

In the final Office Action, the Examiner rejected claims 1, 3-5, 7, 9, 11-13, 17, and 19-20 as unpatentable over Tranchard in view of Feder. (See 04/05/06 *Office Action*, p. 5, ll. 6-8;).

The invention recited in Tranchard is a scrambling unit for a digital transmission system. (See Tranchard, col. 1, ll. 3-7). In one embodiment the scrambler works by replacing null packets in the transport stream, with data packets from memory. (See Id., col. 10, ll. 18-21.) In another embodiment, Tranchard inserts packets from several tables, by using an algorithm, based on the type of packets in each of the tables, to select packets for insertion. (See Id., col. 10, ll. 29-56).

The invention recited in Feder relates to bandwidth optimization. The relevant embodiment, cited by the Examiner, relates to a method of estimating required bandwidth. (See Feder, p. 17, ¶¶ 367-373).

B. The Cited Patents Do Not Disclose Prioritizing and Scheduling Insertion of Insertion Content To Be Inserted Within Said Transport Stream Based Upon Said Estimate of Future Available Bandwidth and Required Insertion Bandwidth of Said Insertion Content as Recited in Claims 1, 5, 9, and 13.

The Examiner asserts that the Tranchard patent discloses the recited "a bandwidth estimator producing an estimate of available bandwidth." (See Id., p. 5, ll. 21-22). The Examiner also asserts that the Tranchard patent discloses the recited "a scheduler . . . prioritizing and scheduling insertion of content to be inserted within said transport stream based upon said estimate of available bandwidth of said insertion content obtained from a source separate from said incoming transport stream." (See Id., p. 6, ll. 1-4).

Appellants respectfully submit that Tranchard does not disclose the recitation of "scheduling insertion of insertion content to be inserted within said transport stream based upon said estimate of future available bandwidth and required insertion bandwidth of said insertion content." (See Specification, Claim 1). The bandwidth calculator in Tranchard is used to "count the number of null packets so as to evaluate the bit rate available for insertion." (See Tranchard, col. 8, ll. 35-38). Absent from Tranchard is any intention to use the bandwidth calculator to produce an "estimate of future available bandwidth," as recited in claim 1. Tranchard is solely concerned with analyzing and modifying a current data stream, not future ones. The bit rate determined by the bandwidth calculator is indicative of only the current data stream, and would provide no basis whatsoever for an expected future bandwidth. As described in the specification of the present application, "Estimates of future available bandwidth are produced from periodic sampling of bandwidth utilization together with information regarding upcoming programming changes." (See Specification, p. 4, lines 10-13). Thus, an estimate of future bandwidth requires more than just an analysis of the bit rate of the current data stream.

In addition, the Tranchard scheduler only selects which packet gets inserted, not when, or if, it gets inserted. The suggested methods of selecting packets for insertion are based upon a priority of what is to be inserted. (See Id., col. 10, ll. 26-56). That is, each of the inserted

packets are queued for automatic insertion at the next null packet. (See Id.). Available bandwidth of the stream into which the packets are to be inserted is moot. Thus, not only does the Tranchard scheduler fail to estimate future bandwidth, it also fails to even control when the packets are inserted. Accordingly, it is respectfully submitted that Tranchard neither discloses nor suggests "prioritizing and scheduling insertion of insertion content to be inserted within said transport stream *based upon said estimate of future available bandwidth and required insertion bandwidth of said insertion content*," as recited in claim 1.

The Examiner attempts to cure the deficiencies of Tranchard with Feder. However, Feder does not teach or suggest scheduling insertion. The system described by Feder is one in which bandwidth must be shared between many devices, such as servers. (See Feder, p. 17, ¶ [0366]). A cable provider allocates a predetermined amount of bandwidth to each server and the bandwidth is adjusted using statistical multiplexing, such that an average available bandwidth for each server channel is maintained at a desired value. (See Id., p. 17, ¶ [0367]). This method of bandwidth allocation is completely unrelated to the insertion of content. According to Feder, a predetermined amount of bandwidth is pre-allocated to a server and dynamically adjusted. However, whether the bandwidth is increased or decreased, the bandwidth remains dedicated entirely to that server. Feder provides no indication or suggestion that unused bandwidth can be inserted with content. Additional bandwidth is simply distributed amongst the remaining servers.

Furthermore, the Examiner notes that Feder discloses storing average bandwidth requirements for particular programs so that required bandwidth may be better estimated. (See Id., p. 17, ¶ [0371]). This is unsurprising considering that Feder desires to allocate sufficient bandwidth to each server. However, even if the bandwidth requirements are known, this still

provides no indication of future bandwidth availability. Because Feder's system sets bandwidth based on current or, in this case, anticipated needs, Feder actually determines future bandwidth rather than estimating it.

Thus, it is respectfully submitted that neither Tranchard nor Feder, either alone or in combination, disclose or suggest a scheduler that prioritizes and schedules insertion of content within a transport beam based upon an estimate of future available bandwidth and characteristics of insertion content as recited in claims 1, 5, 9, and 13. Thus it is respectfully submitted that neither Tranchard nor Feder, either alone or in combination, disclose or suggest a scheduler that prioritizes and schedules insertion of content within a transport beam based upon an estimate of future available bandwidth and characteristics of insertion content as recited in claims 1, 5, 9, and 13. Because claims 3, 4, 7, 11 and 12 depend from and include the limitations of claims 1, 5, and 9, it is respectfully requested that the Examiner's rejection of these claims be overturned.

Claim 17 recites "a second portion derived from insertion content, wherein a ratio of the first portion to the second portion is determined by an estimate of available bandwidth within said transport stream . . . wherein said estimate of available bandwidth within said transport stream is derived from information regarding future programming to be transmitted on said transport stream." Thus, it is respectfully submitted that claim 17 is allowable for at least the same reasons as claim 1. Accordingly, Appellants respectfully request that the Examiner's rejection of claim 17 and all claims depending directly or indirectly therefrom (claims 19 and 20) be overturned.

II. The Rejection of Claims The Rejection of Claims 2, 6, 8, 10, 14-16, and 18 Under 35 U.S.C. § 103(a) Being Obvious Over Tranchard in View of Feder and Further in View of Sohraby Should Be Reversed.

A. The Examiner's Rejection

In the final Office Action, the Examiner rejected claims 2, 6, 8, 10, 14-16, and 18 as unpatentable over Tranchard in view of Feder and further in view of Sohraby. (See 04/05/06 *Office Action*, p. 8, ll. 3-5).

The Examiner stated that "Sohraby teaches a network routing method wherein bandwidth utilization is periodically measured to ensure a more accurate prediction of network congestion and available resources." (See Id., p. 8, ll. 14-16).

B. The Cited Patents Do Not Disclose Prioritizing and Scheduling Insertion of Insertion Content To Be Inserted Within Said Transport Stream Based Upon Said Estimate of Future Available Bandwidth and Required Insertion Bandwidth of Said Insertion Content as Recited in Claims 1, 5, 9, and 13.

Claims 2, 6, 8, 10, and 14-16 depend on claims 1, 5, 9, and 13. Therefore, these dependent claims include all of the elements and limitations of their respective independent claims. Thus it is respectfully submitted that neither Tranchard nor Feder nor Sohraby, either alone or in combination, disclose or suggest a scheduler that prioritizes and schedules insertion of content within a transport stream based upon an estimate of future available bandwidth and characteristics of insertion content as recited in claims 1, 5, 9, and 13.

As previously discussed, neither Tranchard nor Feder disclose or suggest "a second portion derived from insertion content, wherein a ratio of the first portion to the second portion is determined by an estimate of available bandwidth within said transport stream . . . wherein said estimate of available bandwidth within said transport stream is derived from

information regarding future programming to be transmitted on said transport stream," as recited in claim 17. It is respectfully submitted that Sohraby is insufficient to cure this deficiency. Because claim 18 depends from and includes the limitations of claim 17, Appellants respectfully request that the Examiner's rejection of claim 18 be overturned.

III. The Rejection of Claims The Rejection of Claim 21 Under 35 U.S.C. § 103(a) Being Obvious Over Tranchard in View of Feder and Further in View of Wu Should Be Reversed.

A. The Examiner's Rejection

In the final Office Action, the Examiner rejected claim 21 as unpatentable over Tranchard in view of Feder and further in view of Wu. (See Id., p.10, ll. 1-3).

The Examiner stated that "Wu teaches a data insertion mechanism ... configured to prioritize and schedule insertion of content within a channel based upon bit rate requirements of said insertion content, priority of said insertion content, and remaining available bandwidth within the channel." (See Id., p.10, ll. 10-13).

B. The Cited Patents Do Not Disclose Prioritizing and Scheduling Insertion of Insertion Content To Be Inserted Within Said Transport Stream Based Upon Said Estimate of Future Available Bandwidth and Required Insertion Bandwidth of Said Insertion Content as Recited in Claims 1, 5, 9, and 13.

Claim 21 depends on claim 1. Therefore, dependent claims include all of the elements and limitations of its respective independent claims. Thus it is respectfully submitted that neither Tranchard nor Feder nor Wu, either alone or in combination, disclose or suggest a scheduler that prioritizes and schedules insertion of content within a transport beam based upon an estimate of future available bandwidth and characteristics of insertion content as recited in claim 1.

IV. The Rejection of Claims The Rejection of Claims 22 and 23 Under 35 U.S.C. § 103(a) Being Obvious Over Tranchard in View of Feder and Further in View of Rudrapatna Should Be Reversed.

A. The Examiner's Rejection

In the final Office Action, the Examiner rejected claims 22 and 23 as unpatentable over Tranchard in view of Feder and further in view of Rudrapatna. (See Id., p.11, ll. 3-5).

The Examiner stated that "Rudrapatna teaches tracking bandwidth utilization as a function of time of day to identify traffic patterns." (See Id., p.10, ll. 10-13).

B. The Cited Patents Do Not Disclose Prioritizing and Scheduling Insertion of Insertion Content To Be Inserted Within Said Transport Stream Based Upon Said Estimate of Future Available Bandwidth and Required Insertion Bandwidth of Said Insertion Content as Recited in Claims 1, 5, 9, and 13.

Claims 22 and 23 depend on claim 1. Therefore, dependent claims include all of the elements and limitations of its respective independent claims. Thus it is respectfully submitted that neither Tranchard nor Feder nor Rudrapatna, either alone or in combination, disclose or suggest a scheduler that prioritizes and schedules insertion of content within a transport beam based upon an estimate of future available bandwidth and characteristics of insertion content as recited in claim 1.

V. The Rejection of Claims The Rejection of Claims 24 and 25 Under 35 U.S.C. § 103(a) Being Obvious Over Tranchard in View of Feder and Further in View of Jeffrey Should Be Reversed.

A. The Examiner's Rejection

In the final Office Action, the Examiner rejected claims 24 and 25 as unpatentable over Tranchard in view of Feder and further in view of Jeffrey. (See Id., p.12, ll. 11-13).

The Examiner stated that "Jeffrey teaches including an override unit in a service provider that enables the insertion of content at any time . . . enabling for the insertion of emergency broadcasts." (See Id., p.10, ll. 10-13).

B. The Cited Patents Do Not Disclose Prioritizing and Scheduling Insertion of Insertion Content To Be Inserted Within Said Transport Stream Based Upon Said Estimate of Future Available Bandwidth and Required Insertion Bandwidth of Said Insertion Content as Recited in Claims 1, 5, 9, and 13.

Claims 24 and 25 depend on claim 1. Therefore, dependent claims include all of the elements and limitations of its respective independent claims. Thus it is respectfully submitted that neither Tranchard nor Feder nor Jeffrey, either alone or in combination, disclose or suggest a scheduler that prioritizes and schedules insertion of content within a transport beam based upon an estimate of future available bandwidth and characteristics of insertion content as recited in claim 1.

VI. The Rejection of Claims 17-20 Under 35 U.S.C. § 101(a) for Claiming Unpatentable Subject Matter Should Be Reversed

A. The Examiner's Rejection

In the final Office Action, the Examiner rejected claims 17 – 20 as claiming non-statutory subject matter. (See 04/05/06 *Office Action*, p. 3, ll. 7-10). The Examiner states that the "a claimed signal is clearly not a 'process' under § 101 because it is not a series of steps." (See Id., p. 3, ll. 11-12). The Examiner also states that the signal "does not fall into one of the four statutory classes of § 101." (See Id., p. 4, ll. 5-6).

B. Claims 17-20 are Patentable Subject Matter Under 35 U.S.C. § 101

Appellants contend that each of the rejected claims recite a specific signal structure that is statutory under 35 U.S.C. § 101. For example, claim 17 recites "[a] data transport stream embedded in a carrier comprising: a first portion derived from a transport stream; and a second portion derived from insertion content, wherein a ratio of the first portion to the second portion is determined by an estimate of available bandwidth within said transport stream representing selected replaceable content within said transport stream and by insertion of said insertion content by replacement of said selected replaceable content within said transport stream with portion of said insertion content to form said data transport stream if sufficient bandwidth is available, said sufficient bandwidth being determined from said estimate of available bandwidth and required insertion bandwidth of said insertion content, wherein said estimate of available bandwidth within said transport stream is derived from information regarding future programming to be transmitted on said transport stream."

Thus, claim 17 is presented in the typical format associated with structural signal claims, *i.e.*, an arrangement of data segments and content of data segments that is manufactured to be propagated from one location to another before being received and processed. U.S. Patents 6,052,150, 5,991,330 and 5,500,739, include allowed signal claims that are in the same format and have the same structure as the rejected claims in the present application. Appellants are also aware of multiple additional issued claims in the same format.

The Examiner contends that the rejected claims do "not fall within one of the four statutory classes of § 101." (See Id., p. 4, ll. 5-6). Appellants respectfully disagree. The claimed signal does not occur naturally. It is manufactured for the specific purpose of being transmitted from, for example, a transmitter to a receiver as described in the specification. It exists in a

tangible medium, *e.g.*, the transmitter and the receiver. The claimed signal may exist for only a short period of time, but the transitory nature of the signal is irrelevant to the analysis.

> A signal claim directed to a practical application of electromagnetic energy is statutory regardless of its transitory nature.
>
> *MPEP* §2106.IV.B.1(c) (citing *O'Reilly v. Morse*, 56 U.S. 62, 112-114).

Thus, Appellants respectfully submit that the claimed signal is a manufacture. It is manufactured in accordance with the recitations of the claim to include specific structural components (data segments and content of data segments) to be propagated from one location to another. The claimed structural components are clear from the plain meaning of the claim language. Each rejected claim sets forth the specific structural components in the claimed signal. Accordingly, Apellants respectfully submit that the signal of claim 17 is statutory subject matter under 35 U.S.C. § 101.

While Appellants believe that the claimed signals are structural, the Appellants respectfully submit that, at worst, each of the rejected claims recite a signal having *functional* descriptive material as that term is defined in the Manual of Patenting Examining Procedures ("MPEP"). *MPEP 2106 IV.B.1(b)* states that functional descriptive material "consists of data structures and computer programs which impart functionality when employed as a computer component." When functional descriptive material is "recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized." The *MPEP* goes on to state that the claimed invention as a whole should be considered to determine if a functional interrelationship exists. Appellants respectfully submit

that the Examiner has not performed the requisite considerations to determine if the claimed subject matter is functional or non-functional. The MPEP also provides guidelines for reviewing Patentable Subject Matter as a whole, including: i) identify and understand any practical application asserted for the invention; ii) review the detailed disclosure and specific embodiments of the invention to determine what the applicant has invented; and iii) review the claims. (*MPEP* § 2106 II). Appellants respectfully submit that by reviewing the claimed subject matter in accordance with the guidelines provided by the MPEP, the claimed subject matter is statutory.

With respect to the practical application of the claimed signal, the specification describes that the practical application of the data stream signal is useful for transmission and reception of inserted content within a data stream without disturbing the broadcast stream to television or other receivers. (See Specification, p. 3, lines 5-10). The specification also provides a tangible result that is realized based on the use of the claimed signal. (See Id., p. 2, lines 3-12). Moreover, the specification provides detailed examples of the data signal including the field, the plurality of data items and the plurality of identifiers. (See Id., p. 23, l. 9 - p. 24, l. 19). The specification describes how this signal interacts with a transmitter, then the specification goes on to describe how this signal interacts with a receiver. (See Id., p. 14, l. 7 - p. 15, l. 8). Thus, the specification makes it clear that the claimed signal becomes structurally and functionally interrelated to the transmitter and/or receiver and the use of the claimed signal permits the function of the descriptive material to be realized.

Thus, Appellants respectfully submit that when the claimed invention, as a whole, is considered, a functional interrelationship exists with the transmitter and/or receiver described in the specification. The claimed signal does not merely recite physical characteristics of a

signal such as frequency, voltage, etc. Rather, the claimed signal includes a functional recitation of components of the signal that interact with the transmitter and/or receiver to produce a tangible result. This is clear from both the claim language itself and from the description of the operation of a transmitter and receiver in the specification. Thus, according to the guidelines presented by the MPEP, the claimed subject matter is functional and therefore, statutory subject matter.

> The MPEP succinctly states the current state of the substantive law:
>
> A signal claim directed to a practical application of electromagnetic energy is statutory regardless of its transitory nature.
>
> *MPEP* §2106.IV.B.1(c) (citing *O'Reilly v. Morse*, 56 U.S. 62, 112-114).

In re Breslow, 616 F.2d 516 (CCPA 1980) and *Ex Parte Rice*, BPAI Appeal No. 2002-1554 (Application No. 08/003,996) further elucidate the current state of the substantive law with respect to signal claims.

As described in detail above, the claimed signal of claim 17, is either structural or directed to a practical application of the signal. Thus, according to the MPEP and the current state of the substantive law, the claimed subject matter is statutory.

Accordingly for at least the reasons described above, the 35 U.S.C. §101 rejection of claim 17 should be withdrawn.

Claims 18 - 20 depends on claim 17. Therefore, dependent claims include all of the elements and limitations of its respective independent claims. Thus it is respectfully submitted that claims 18-20 are also allowable.

VII. The Rejection of Claim 22 Under 35 U.S.C. § 112 for Containing Subject Matter not Described in the Specification Should Be Reversed

A. The Examiner's Rejection

In the final Office Action, the Examiner rejected claim 22 as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. (See 04/05/06 *Office Action*, p. 4, ll. 10 - 14).

B. The Specification Sufficiently Describes the Subject Matter Recited in Claim 22.

The Examiner asserts that the originally filed specification's statement clearly distinguishes history tables and electronic program guides as two distinct embodiments. (See Id., p. 4, ll. 15 - 19). Appellants respectfully disagree. The specification states that for television broadcasts you can use "system information tables and/or electronic program guide (EPG) data . . . [Additionally] **history tables** . . . may be employed for other environments." (See Specification, p. 16, ll. 14-20) (Emphasis added). As stated earlier in the specification "and/or" is meant to be inclusive not exclusive, by not listing history tables as the preferred method for television broadcasts, appellants did not exclude them. (See Specification, p. 5, l. 14). It would be obvious to one skilled in the art that, although less efficient than electronic program guides, history tables may be used in the television broadcast environment. In other environments, where electronic program guides are unavailable, history tables may be the only option. Thus, Appellants respectfully submit that the Claim 22 rejection should be reversed because the description in the specification makes it obvious, to a person skilled in the art, that the Appellants possessed the claimed invention.

8. Conclusion

For the reasons set forth above, Appellant respectfully requests that the Board reverse the final rejection of claims 1-25 by the Examiner under 35 U.S.C. § 103(a), claim 17 – 20 by the Examiner under 35 U.S.C. § 101(a), and claim 22 by the Examiner under 35 U.S.C. § 112 and indicate that claims 1-25 are allowable.

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CLAIMS APPENDIX

1. For use in a transceiver, an adaptive data insertion mechanism for inserting data within a transport stream without destructive disturbance comprising:

a bandwidth estimator producing an estimate of future available bandwidth within said transport stream from future programming information to be transmitted by said transport stream;

a scheduler prioritizing and scheduling insertion of insertion content to be inserted within said transport stream based upon said estimate of future available bandwidth and required insertion bandwidth of said insertion content; and

an insertion unit inserting scheduled insertion content within said transport stream by replacement of selected replaceable content within said transport stream to form a new transport stream if sufficient bandwidth is available, said sufficient bandwidth being determined from said estimate of future available bandwidth and said required insertion bandwidth.

2. The adaptive data insertion mechanism as set forth in claim 1 wherein said bandwidth estimator produces said estimate of future available bandwidth from periodic bandwidth utilization measurements for said transport stream and information regarding current and future programming transmitted by said transport stream.

3. The adaptive data insertion mechanism as set forth in claim 1 wherein said insertion unit replaces selected packets within said transport stream which include one of one or more selected packet type identifiers with packets for said insertion content while passing packets which include packet type identifiers other than said selected packet type identifiers to form said new transport stream.

4. The adaptive data insertion mechanism as se forth in claim 3 wherein said insertion unit replaces null packets within an MPEG-2 transport stream.

5. A transceiver comprising:

an input connection receiving an incoming transport stream;

an output connection from which a new transport stream is transmitted, said new transport stream including at least portions of said incoming transport stream; and

an adaptive data insertion mechanism for inserting data within said incoming transport stream without destructive disturbance comprising:

a bandwidth estimator producing an estimate of future available bandwidth within said incoming transport stream;

a scheduler prioritizing and scheduling insertion of insertion content to be inserted within said new transport stream based upon said estimate of future available bandwidth and required insertion bandwidth of said insertion content obtained from a source separate from said incoming transport stream; and

an insertion unit inserting scheduled insertion content within said new transport stream by replacement of selected replaceable content within incoming transport stream to form said new transport stream if sufficient bandwidth is available, said sufficient bandwidth being determined from said estimate of future available bandwidth and said required insertion bandwidth.

6. The transceiver as set forth in claim 5 wherein said bandwidth estimator produces said estimate of future available bandwidth from periodic bandwidth utilization measurements for said incoming transport stream and information regarding current and future programming transmitted by said incoming transport stream.

7. The transceiver as set forth in claim 5 wherein said insertion unit replaces selected packets within said incoming transport stream which include one of one or more selected packet type identifiers with packets for said insertion content while passing packets which include packet type identifiers other than said selected packet type identifiers to form said new transport stream.

8. The transceiver as set forth in claim 6 wherein said insertion unit replaces null packets within an MPEG-2 transport stream.

9. For use in a transceiver, a method of adaptive data insertion within a transport stream without destructive disturbance comprising the acts of:

producing an estimate of future available bandwidth within the transport stream;

prioritizing and scheduling insertion of insertion content to be inserted within the transport stream based upon the estimate of future available bandwidth and required insertion bandwidth of said insertion content; and

inserting scheduled insertion of insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream if sufficient bandwidth is available, said sufficient bandwidth being determined from said estimate of future available bandwidth and said required insertion bandwidth.

10. The method as set forth in claim 9 wherein the act of producing an estimate of future available bandwidth within the transport stream further comprises the act of:

producing the estimate of future available bandwidth from periodic bandwidth utilization measurements for the transport stream and information regarding current and future programming transmitted on the transport stream.

11. The method as set forth in claim 9 wherein the act of inserting scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream further comprises the act of:

replacing selected packets within the transport stream which include one of one or more selected packet type identifiers with packets for the insertion content while passing packets which include packet type identifiers other than the selected packet type identifiers to form the new transport stream.

12. The method as set forth in claim 11 wherein the act of replacing selected packets within the transport stream which include one of one or more selected packet type identifiers with packets for the insertion content while passing packets which include packet type identifiers other than the selected packet type identifiers to form the new transport stream further comprises the act of:

replacing selected null packets within an MPEG-2 transport stream.

13. A computer program product within a computer usable medium for adaptive data insertion within a transport stream without destructive disturbance comprising:

instructions for producing an estimate of future available bandwidth within the transport stream;

instructions for prioritizing and scheduling insertion of insertion content to be inserted within the transport stream based upon the estimate of future available bandwidth and required insertion bandwidth of said insertion content; and

instructions for inserting scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream if sufficient bandwidth is available, said sufficient bandwidth being determined from said estimate of future available bandwidth and said required insertion bandwidth.

14. The computer program product as set forth in claim 13 wherein the instructions for producing an estimate of future available bandwidth within the transport stream further comprise:

instructions for producing the estimate of future available bandwidth from periodic bandwidth utilization measurements for the transport stream and information regarding future programming transmitted on the transport stream.

15. The computer program product as set forth in claim 14 wherein the instructions for inserting scheduled insertion content within the transport stream by replacement of selected replaceable content within the transport stream to form a new transport stream further comprise: instructions for replacing selected packets within the transport stream which include one of one or more selected packet type identifiers with packets for the insertion content while passing packets which include packet type identifiers other than the selected packet type identifiers to form the new transport stream.

16. The computer program product as set forth in claim 15 wherein the instructions for replacing selected packets within the transport stream which include one of one or more selected packet type identifiers with packets for the insertion content while passing packets which include packet type identifiers other than the selected packet type identifiers to form the new transport

stream further comprise: instructions for replacing selected null packets within an MPEG-2 transport stream.

17. A data transport stream embedded in a carrier comprising:

a first portion derived from a transport stream; and

a second portion derived from insertion content, wherein a ratio of the first portion to the second portion is determined by an estimate of available bandwidth within said transport stream representing selected replaceable content within said transport stream and by insertion of said insertion content by replacement of said selected replaceable content within said transport stream with portion of said insertion content to form said data transport stream if sufficient bandwidth is available, said sufficient bandwidth being determined from said estimate of available bandwidth and required insertion bandwidth of said insertion content,

wherein said estimate of available bandwidth within said transport stream is derived from information regarding future programming to be transmitted on said transport stream.

18. The data transport stream as set forth in claim 17 wherein said estimate of available bandwidth within said transport stream is derived from periodic bandwidth utilization measurements for said transport stream and information regarding future programming transmitted on said transport stream.

19. The data transport stream as set forth in claim 17 wherein: said first portion further comprises packets within said transport stream which include packet type identifiers other than one or more selected packet type identifiers; and said second portion further comprises packets for said insertion content in place of packets within said transport stream which include one of said one or more selected packet type identifiers.

20. The data transport stream as set forth in claim 19 wherein said second portion further comprises packets for said insertion content in place of null packets within an MPEG-2 transport stream forming the transport stream.

21. The adaptive data insertion mechanism as set forth in Claim 1 wherein said scheduler is further configured to prioritize and schedule said insertion of said insertion content within said transport stream based upon bit rate requirement of said insertion content, priority of said insertion content, and remaining available bandwidth within said estimate of future available bandwidth.

22. The adaptive data insertion mechanism as set forth in Claim 1 wherein said future programming information is obtained from an electronic program guide, event information is obtained from an electronic program guide, event information tables and history tables tracking bandwidth utilization as a function of a time of day.

23. The adaptive data insertion mechanism as set forth in Claim 1 wherein said future programming information is obtained from at least one of an electronic program guide, event information tables and history tables tracking bandwidth utilization as a function of a time of day.

24. The adaptive data insertion mechanism as set forth in Claim 1, further comprising an override unit configured to insert said insertion content even when said sufficient bandwidth is not available for a desired quality by reducing said desired quality.

25. The adaptive data insertion mechanism as set forth in Claim 1, further comprising an override unit configured to insert further insertion content instead of said scheduled insertion content when said further insertion content has a higher priority than said scheduled insertion content.

EVIDENCE APPENDIX

No evidence has been entered or relied upon in the present appeal.

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RELATED PROCEEDING APPENDIX

No decisions have been rendered regarding the present appeal or any proceedings related thereto.